

appendix A: solmet radiation data

These data were “manufactured” from local weather data and then correlated with similar weather conditions in the Lower 48. In the case of coastal sites in Alaska, the correlations were done using data from Seattle. If the sites were continental or arctic climates, the correlations were made using data from Great Falls, Montana. These are not ideal data, but they are in a useful format. Tapes of SOLMET data are available from the National Climatic Center, NOAA, Asheville, NC 18801.

To convert solar radiation in BTU per square foot to kilojoules per square meter, multiply by the conversion factor $0.088 \text{ KJ/m}^2/\text{BTU/ft}^2$. To convert solar radiation data in BTU per square foot to langley (calories per square centimeter), multiply by the conversion factor $0.271246 \text{ langley/BTU/ft}^2$.

TABLE A1: ANNETTE SOLMET DATA.

Month	Incident Solar Radiation, BTU/day-ft ²				Degree Days °F-day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	177.9	448.4	180.6	0	976	33.8
Feb	374.7	660.7	353.6	0	792	37.4
Mar	717.1	851.6	603.2	0	828	39.2
Apr	1,149.5	886.7	846.7	0	666	42.8
May	1,473.1	880.6	1,025.8	138.7	484	50.0
Jun	1,465.6	803.3	983.3	286.7	319	55.4
Jul	1,439.2	816.1	977.4	232.3	230	57.2
Aug	1,162.3	790.3	822.6	71.0	211	59.0
Sep	812.2	766.7	613.3	0	329	53.6
Oct	422.2	603.2	361.3	0	562	46.4
Nov	218.6	493.3	216.7	0	752	39.2
Dec	122.5	325.8	122.6	0	902	35.6
Annual ¹	794.6	694.2	593.7	61.1	7,051	45.7

¹All are annual means except degree days; this value is the yearly total.

TABLE A2: BETHEL SOLMET DATA.

Month	Incident Solar Radiation, BTU/day·ft ²				Degree Days °F·day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	96.8	432.3	129.0	0	1,858	5.0
Feb	316.7	850.0	378.6	0	1,589	8.6
Mar	738.5	1,238.7	800.0	0	1,661	12.2
Apr	1,200.4	1,136.7	1,040.0	0	1,215	24.8
May	1,453.2	948.4	1,074.2	48.4	772	39.2
Jun	1,518.4	886.7	1,073.3	206.7	401	51.8
Jul	1,289.7	787.1	909.7	206.5	319	55.4
Aug	920.0	661.3	667.7	87.1	394	51.8
Sep	700.7	753.3	573.3	0	599	44.6
Oct	370.3	729.0	367.7	0	1,078	30.2
Nov	135.2	493.3	163.3	0	1,435	17.6
Dec	48.7	235.5	64.5	0	1,879	5.0
Annual ¹	732.4	766.8	603.8	46.0	13,201	28.7

¹All are annual means except degree days; this value is the yearly total.

TABLE A3: BETTLES SOLMET DATA.

Month	Incident Solar Radiation, BTU/day-ft ²				Degree Days °F-day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	10.0	119.4	19.4	0	2,425	-13.0
Feb	172.3	717.9	253.6	0	2,038	-7.6
Mar	615.6	1,364.5	793.5	0	1,969	1.4
Apr	1,228.3	1,393.3	1,240.0	0	1,336	21.2
May	1,698.7	1,238.7	1,425.8	0	722	41.0
Jun	1,857.2	1,166.7	1,453.3	0	270	55.4
Jul	1,562.6	1,032.3	1,222.6	19.4	230	57.2
Aug	1,075.1	890.3	893.5	0	407	51.8
Sep	672.2	926.7	653.3	0	751	39.2
Oct	252.1	735.5	309.7	0	1,395	19.4
Nov	40.3	366.7	73.3	0	1,993	-2.2
Dec	0	0	0	0	2,392	-13.0
Annual ¹	765.4	828.2	696.2	1.6	15,926	21.3

¹All are annual means except degree days; this value is the yearly total.

TABLE A4: BIG DELTA SOLMET DATA.

Month	Incident Solar Radiation, BTU/day-ft ²				Degree Days °F-day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	45.9	309.7	71.0	0	2,167	-4.0
Feb	247.1	832.1	328.6	0	1,724	3.2
Mar	711.3	1,409.7	851.6	0	1,634	12.2
Apr	1,244.3	1,300.0	1,166.7	0	1,067	30.2
May	1,669.7	1,161.3	1,329.0	0	580	46.4
Jun	1,782.6	1,083.3	1,336.7	56.7	257	57.2
Jul	1,613.8	1,032.3	1,225.8	29.0	182	59.0
Aug	1,229.0	996.8	1,000.0	0	322	55.4
Sep	766.9	983.3	703.3	0	643	42.8
Oct	326.1	803.2	364.5	0	1,235	24.8
Nov	92.6	540.0	140.0	0	1,742	6.8
Dec	9.1	51.6	12.9	0	2,146	-4.0
Annual ¹	811.5	874.2	712.9	7.12	13,700	27.5

¹All are annual means except degree days; this value is the yearly total.

TABLE A5: FAIRBANKS SOLMET DATA.						
Month	Incident Solar Radiation, BTU/day-ft ²				Degree Days °F-day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	30.1	206.5	45.2	0	2,383	-11.2
Feb	221.4	778.6	300.0	0	1,890	-2.2
Mar	674.2	1,361.3	819.4	0	1,721	10.4
Apr	1,193.9	1,256.7	1,126.7	0	1,084	28.4
May	1,603.6	1,122.6	1,280.6	0	549	46.4
Jun	1,751.9	1,073.3	1,323.3	63.3	211	59.0
Jul	1,542.5	993.5	1,171.0	58.1	148	60.8
Aug	1,118.0	900.0	900.0	0	304	55.4
Sep	709.4	906.7	653.3	0	617	44.6
Oct	292.6	729.0	329.0	0	1,235	24.8
Nov	74.1	466.7	116.7	0	1,867	3.2
Dec	2.5	9.7	3.2	0	2,336	-11.2
Annual ¹	767.8	816.4	673.9	10.1	14,344	25.7

¹All are annual means except degree days; this value is the yearly total.

TABLE A6: GULKANA SOLMET DATA.						
Month	Incident Solar Radiation, BTU/day·ft ²				Degree Days °F-day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	72.8	374.2	103.2	0	2,241	-7.6
Feb	286.4	839.3	357.1	0	1,712	3.2
Mar	757.7	1,390.3	864.5	0	1,564	14.0
Apr	1,304.4	1,316.7	1,190.0	0	1,044	30.2
May	1,614.4	1,083.9	1,238.7	0	657	44.6
Jun	1,757.8	1,043.3	1,290.0	93.3	333	53.6
Jul	1,612.0	1,006.5	1,196.8	58.1	254	57.2
Aug	1,251.4	980.6	990.3	0	365	53.6
Sep	795.0	956.7	700.0	0	643	42.8
Oct	390.0	900.0	422.6	0	1,184	26.6
Nov	116.3	503.3	153.3	0	1,768	6.8
Dec	28.5	148.4	35.5	0	2,173	-5.8
Annual ¹	832.2	878.4	713.2	12.6	13,937	26.8

¹All are annual means except degree days; this value is the yearly total.

TABLE A7: HOMER SOLMET DATA.						
Month	Incident Solar Radiation, BTU/day-ft ²				Degree Days °F-day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	121.6	496.8	151.6	0	1,352	21.2
Feb	333.9	807.1	364.3	0	1,123	24.8
Mar	759.3	1,145.2	725.8	0	1,159	28.4
Apr	1,248.3	1,100.0	1,006.7	0	900	35.6
May	1,582.6	1,019.4	1,171.0	0	704	42.8
Jun	1,750.6	1,003.3	1,250.0	4.0	490	48.2
Jul	1,598.0	964.5	1,151.6	3.3	394	51.8
Aug	1,188.7	877.4	893.5	0	391	51.8
Sep	791.4	860.0	650.0	0	540	46.4
Oct	437.1	871.0	438.7	0	857	37.4
Nov	175.3	636.7	213.3	0	1,103	28.4
Dec	64.0	267.7	77.4	0	1,352	21.2
Annual ¹	837.6	837.0	676.2	7.3	10,364	36.5

¹All are annual means except degree days; this value is the yearly total.

TABLE A8: JUNEAU SOLMET DATA.						
Month	Incident Solar Radiation, BTU/day·ft ²				Degree Days	Mean Temperature
	Horizontal Surface	Vertical Surface			°F·day	°F
		South	East/West	North		
Jan	116.3	354.8	125.8	0	1,287	23.0
Feb	282.4	542.9	278.6	0	1,037	28.4
Mar	610.0	771.0	529.0	0	1,026	32.0
Apr	1,045.9	850.0	793.3	0	783	39.2
May	1,291.3	806.5	909.7	4.9	503	46.4
Jun	1,414.4	806.7	970.0	7.9	355	53.6
Jul	1,278.4	758.1	880.6	7.3	288	55.4
Aug	984.5	690.3	703.2	2.9	331	53.6
Sep	638.8	610.0	486.7	0	473	50.0
Oct	320.4	480.6	280.6	0	718	41.0
Nov	148.6	386.7	156.7	0	976	32.0
Dec	61.9	183.9	64.5	0	1,168	26.6
Annual ¹	682.7	603.6	515.9	23.0	9,005	40.3

¹All are annual means except degree days; this value is the yearly total.

TABLE A9: KING SALMON SOLMET DATA.

Month	Incident Solar Radiation, BTU/day-ft ²				Degree Days °F-day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	146.4	571.0	180.6	0	1,600	14.0
Feb	377.3	907.1	410.7	0	1,355	15.8
Mar	799.1	1,180.6	754.8	0	1,382	21.2
Apr	1,205.6	1,026.7	950.0	0	1,004	32.0
May	1,482.3	938.7	1,071.0	2.2	695	42.8
Jun	1,540.5	876.7	1,070.0	6.7	428	50.0
Jul	1,383.6	822.6	964.5	6.3	326	53.6
Aug	1,045.4	745.2	758.1	1.9	347	53.6
Sep	777.9	810.0	623.3	0	531	46.4
Oct	474.0	925.8	471.0	0	974	33.8
Nov	203.7	710.0	246.7	0	1,287	21.2
Dec	91.0	396.8	112.9	0	1,652	12.2
Annual ¹	793.9	824.7	635.3	17.1	11,583	33.2

¹All are annual means except degree days; this value is the yearly total.

TABLE A10: KODIAK SOLMET DATA.

Month	Incident Solar Radiation, BTU/day-ft ²				Degree Days °F-day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	149.3	496.8	171.0	0	1,073	30.2
Feb	355.9	753.6	364.3	0	941	32.0
Mar	781.9	1,090.3	716.1	0	1,021	32.0
Apr	1,207.8	1,006.7	936.7	0	842	37.4
May	1,376.3	854.8	974.2	4.2	677	42.8
Jun	1,529.9	863.3	1,053.3	7.2	459	50.0
Jul	1,408.2	829.0	977.4	6.4	338	53.6
Aug	1,164.2	829.0	851.6	0.5	313	55.4
Sep	794.0	810.0	626.7	0	450	50.0
Oct	489.2	909.7	474.2	0	752	41.0
Nov	206.5	630.0	233.3	0	905	35.6
Dec	97.1	358.1	112.9	0	1,087	30.2
Annual ¹	796.7	785.5	625.2	18.3	8,860	40.7

¹All are annual means except degree days; this value is the yearly total.

TABLE A11: KOTZEBUE SOLMET DATA.

Month	Incident Solar Radiation, BTU/day-ft ²				Degree Days °F-day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	8.5	19	6.5	0	2,130	-3.7
Feb	164	382	157	0	1,940	4.3
Mar	594	990	590	0	2,031	-0.5
Apr	1,181	1,136	1,026	0	1,560	13.0
May	1,642	1,139	1,268	100	1,060	30.8
Jun	1,836	1,136	1,336	320	645	43.5
Jul	1,528	971	1,080	387	375	52.9
Aug	1,044	748	751	245	443	50.7
Sep	648	670	523	0	717	41.1
Oct	256	439	239	0	1,283	23.6
Nov	33	90	30	0	1,719	7.7
Dec	0	0	0	0	2,136	-3.9
Annual ¹	745	643	583	88	16,039	20.9

¹All are annual means except degree days; this value is the yearly total.

TABLE A12: MATANUSKA SOLMET DATA.

Month	Incident Solar Radiation, BTU/day-ft ²				Degree Days °F-day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	119.3	777.4	193.5	-0	1,645	12.2
Feb	339.3	1,053.6	435.7	0	1,285	19.4
Mar	893.5	1,748.4	1,058.1	0	1,240	26.6
Apr	1,313.0	1,306.7	1,186.7	0	859	35.6
May	1,606.5	1,071.0	1,222.6	0	558	46.4
Jun	1,703.3	1,003.3	1,236.7	126.7	302	53.6
Jul	1,506.5	932.3	1,096.8	119.4	232	57.2
Aug	1,158.1	883.9	890.3	0	304	53.6
Sep	730.0	823.3	616.7	0	518	46.4
Oct	367.7	774.2	380.6	0	947	33.8
Nov	140.0	620.0	186.7	0	1,328	21.2
Dec	54.8	403.2	87.1	0	1,627	14.0
Annual ¹	830.1	346.5	261.9	20.9	10,847	35.0

¹All are annual means except degree days; this value is the yearly total.

TABLE A13: McGRATH SOLMET DATA.						
Month	Incident Solar Radiation, BTU/day-ft ²				Degree Days °F·day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	57.9	319.4	83.9	0	2,291	-9.4
Feb	258.5	782.1	325.0	0	1,825	-0.4
Mar	692.7	1,264.5	790.3	0	1,739	8.6
Apr	1,187.8	1,186.7	1,073.3	0	1,156	26.6
May	1,488.2	1,003.2	1,135.5	154.8	648	44.6
Jun	1,586.7	950.0	1,153.3	160.0	284	55.4
Jul	1,379.7	864.5	1,003.2	0	220	59.0
Aug	1,019.1	774.2	780.6	0	396	53.6
Sep	659.0	810.0	600.0	0	635	44.6
Oct	317.0	687.1	332.3	0	1,231	24.8
Nov	100.2	466.7	136.7	0	1,800	5.0
Dec	19.5	109.7	25.8	0	2,300	-9.4
Annual ¹	733.5	767.4	620.8	26.3	14,487	25.2

¹All are annual means except degree days; this value is the yearly total.

TABLE A14: NOME SOLMET DATA.						
Month	Incident Solar Radiation, BTU/day·ft ²				Degree Days °F·day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	30	58	23	0	1,829	6.0
Feb	224	471	207	0	1,674	5.2
Mar	631	897	568	0	1,786	7.4
Apr	1,186	1,057	967	0	1,383	18.9
May	1,573	1,048	1,151	219	936	34.8
Jun	1,753	1,063	1,230	390	585	45.5
Jul	1,414	877	958	458	462	50.1
Aug	993	677	680	312	490	49.2
Sep	673	633	513	0	687	42.1
Oct	306	493	264	0	1,132	28.5
Nov	65	143	53	0	1,482	15.6
Dec	3	3	3	0	1,879	4.4
Annual ¹	738	618	551	115	14,325	25.6

¹All are annual means except degree days; this value is the yearly total.

TABLE A15: SUMMIT SOLMET DATA.						
Month	Incident Solar Radiation, BTU/day-ft ²				Degree Days °F-day	Mean Temperature °F
	Horizontal Surface	Vertical Surface				
		South	East/West	North		
Jan	55.9	341.9	83.9	0	1,966	1.4
Feb	250.9	778.6	321.4	0	1,634	6.8
Mar	698.0	1,309.7	809.7	0	1,669	10.4
Apr	1,239.4	1,270.0	1,143.3	0	1,246	23.0
May	1,632.8	1,119.4	1,277.4	0	857	37.4
Jun	1,632.9	983.3	1,196.7	136.7	481	48.2
Jul	1,411.2	890.3	1,035.5	135.5	403	51.8
Aug	1,043.4	803.2	806.5	0	508	48.2
Sep	703.3	836.7	616.7	0	752	39.2
Oct	344.3	819.4	380.6	0	1,271	24.8
Nov	106.8	580.0	156.7	0	1,660	10.4
Dec	16.5	100.0	22.6	0	1,924	3.2
Annual ¹	761.3	818.4	655.3	22.7	14,369	28.3

¹All are annual means except degree days; this value is the yearly total.